

CLAIMS

1.- A random copolymer comprising: a) at least a vinyl aromatic monomer at a strength ranging from 75 to 95% by weight; b) at least an alkyl methacrylate monomer at a strength of up to 15% by weight, wherein the alkyl moiety has from 1 to 4 carbon atoms; and c) at least an alkyl acrylate monomer at a strength of up to 25% by weight, wherein the alkyl moiety has from 1 to 4 carbon atoms.

2.- The random copolymer according to claim 1 further comprising from 83 to 95% by weight of at least one vinyl aromatic monomer.

3.- The random copolymer according to claim 1 further comprising up to 10% by weight of at least an alkyl acrylate monomer.

4.- The random copolymer according to claim 1 further comprising up to 7% by weight of at least an alkyl acrylate monomer.

5.- The random copolymer according to claim 1 wherein the vinyl aromatic monomer is further selected from the group consisting of styrene, α -methyl styrene, p-methyl styrene, ter-butyl styrene, 2,4 di-methyl styrene monomers and the bromated or chlorinated derivatives thereof.

6.- The random copolymer according to claim 5 wherein the vinyl aromatic monomer is styrene.

7.- The random copolymer according to claim 1 wherein the alkyl methacrylate monomer is further selected from the group consisting of methyl, ethyl, or butyl methacrylate monomers.

8.- The random copolymer according to claim 7 wherein the alkyl methacrylate monomer is methyl methacrylate.

9.- The random copolymer according to claim 1 wherein the alkyl acrylate monomer is further selected from the group consisting of methyl, ethyl, or butyl acrylate monomers.

10.- The random copolymer according to claim 9 wherein the alkyl acrylate monomer is butyl acrylate.

11.- The random copolymer according to claims 6, 8, and 10 further comprising: (a) from 87% to 95% by weight of styrene; (b) from 5% to 10% by weight of methyl methacrylate; and (c) up to 3% by weight of butyl acrylate.

12.- The random copolymer according to claim 1 further having an average molecular weight by number (M_n) from 70,000 to 140,000; an average molecular weight (M_w) from 140,000 to 270,000; a polydispersity from 2.0 to 2.8; and a melt flow index from 2 to 20 g/10 min.

13.- A polymer mixture comprising: (a) from 1 to 75% by weight of the random copolymer as claimed in claim 1; and (b) from 25 to 99% by weight of at least a diblock or triblock copolymer containing styrene monomers or mixtures thereof.

14.- The polymer mixture according to claim 13 wherein the diblock copolymer is further selected from the group consisting of styrene-butadiene, styrene-isoprene copolymers and the partially hydrogenated derivatives thereof.

15.- The polymer mixture according to claim 14 wherein the diblock copolymer is styrene-butadiene containing from 15 to 35% by weight of butadiene.

16.- The polymer mixture according to claim 13 wherein the triblock copolymer is further selected from the group consisting of styrene-butadiene-styrene, styrene-isoprene-styrene copolymers and the partially hydrogenated derivatives thereof.

17.- The polymer mixture according to claim 13 wherein the diblock or triblock copolymer and the mixtures thereof should have a minimal average molecular weight by number (Mn) of 70,000 and a minimal average molecular weight by weight (Mw) of 120,000 in order for such a polymer mixture to be used in extrusion processes.

18.- The polymer mixture according to claim 13 wherein the mixture can be further used in extrusion processes to manufacture films, thin sheets, or plates, which may be subjected to a thermoforming process to manufacture several products having excellent superficial and optical properties, such as blister packages.